



Harvest and Postharvest Handling of Banana

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Area and Production

- Area under Banana orchards in Pakistan:
85,990 acre
- Production of Banana in Pakistan:
154800 tons
- Important Banana producing areas in Pakistan
Sindh

Maturity Indices

- Fullness
- Size
- Shape
- Skin Colour

Maturity Stages of Banana Fruits



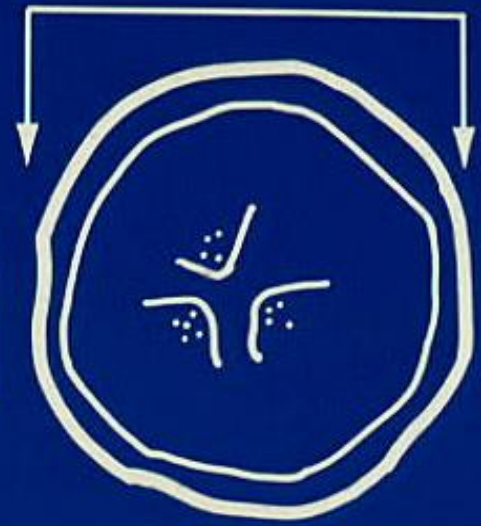
Three-Quarters



Light Full
Three-Quarters



Full Three-Quarters



Full

Postharvest Steps

- Harvesting
- Transportation to pack house
- Pack house operations
 - dehanding/cutting
 - Washing
 - fungicide application
- Packing and shipping
- Handling in market areas
- Ripening
- Response to controlled atmosphere

Harvesting

- Manual (two persons involved).
- Sharp knives are used for harvesting.

Transportation to pack house

- By trolleys, tractors etc.
- Placed in shade

Pack house operations

- Sorting/grading (processing & fresh market)
- Dehanding/cutting of bunches
- Latex flows out which stains fingers
- Washing (to remove latex and dirt)
- This water may be source of fungal post harvest diseases
- For disinfection sodium hypochlorite used
- Chlorine concentration is maintained 75-125ppm.
- Thiabendazole/fungicide may be used
- Additional fungicide treatment improves results
- Alum (Aluminium potassium sulphate is used)

Packing and shipping

- Corrugated fireboard boxes lined with thin polyethylene film.
- Loading to truck/train
- Temp. is kept 13-14⁰C

Ripening

- Ripening rooms
- Temperature 15.5 to 18⁰C
- Ethylene 100-150ppm
- R.H 90-95%
- 24-48hrs

Dole Banana Color Chart



ALL GREEN

As received at your warehouse from Central and South America.



LIGHT GREEN

First color change during warehouse processing, usually seen on the shoulder.



50% GREEN, 50% YELLOW

Recommended color for warehouse outturn. Adjust back or ahead for delivery time, temperature, distance and retail color preferences. Consumers purchase now to enjoy later.



MORE YELLOW THAN GREEN

Ready for retail display. Great eye appeal and long product life. Minimum shrink for retailer.



YELLOW WITH GREEN TIPS

Most popular color stage for consumer purchase. Since higher temperatures speed color change, this color can be maintained longer by holding boxes in a cool area at 56° to 60°F.



FULL YELLOW

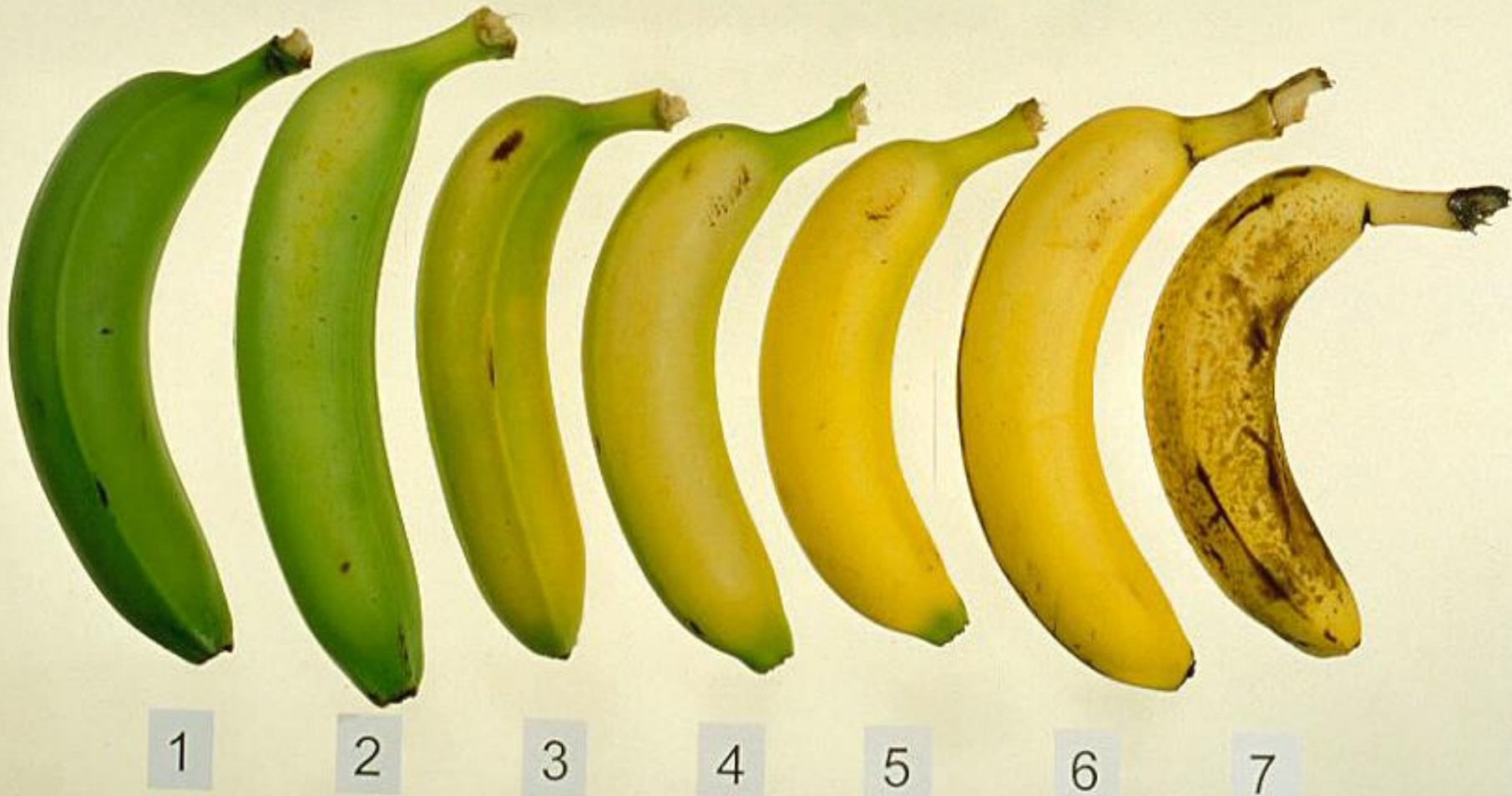
Firm fruit with great eating flavor. Easily bruised - handle with extra care.



YELLOW FLECKED WITH BROWN

Sweet eating flavor. Perfect texture and consistency for blender drinks and baking.

Banana Ripeness Chart



1

2

3

4

5

6

7

Banana Ripness Chart

Starch Pattern

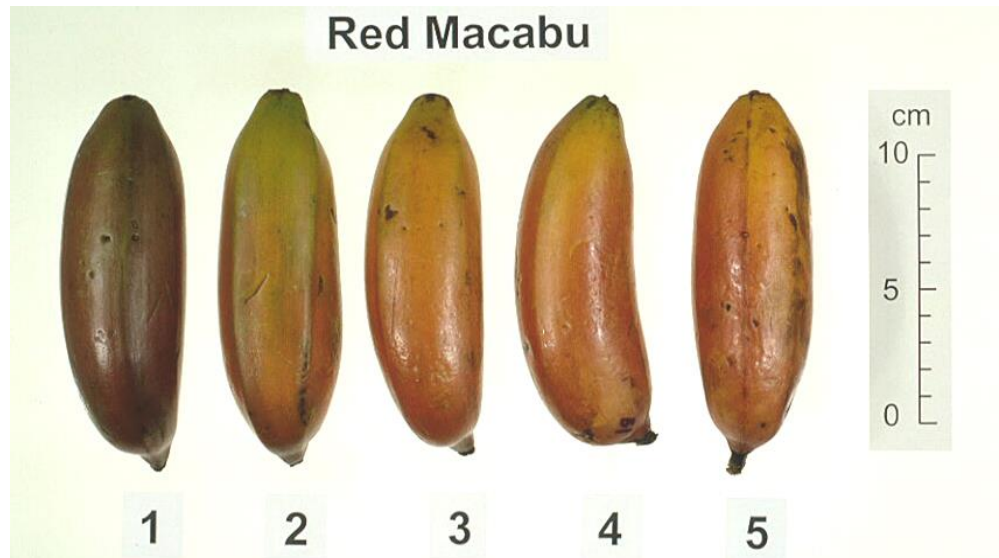
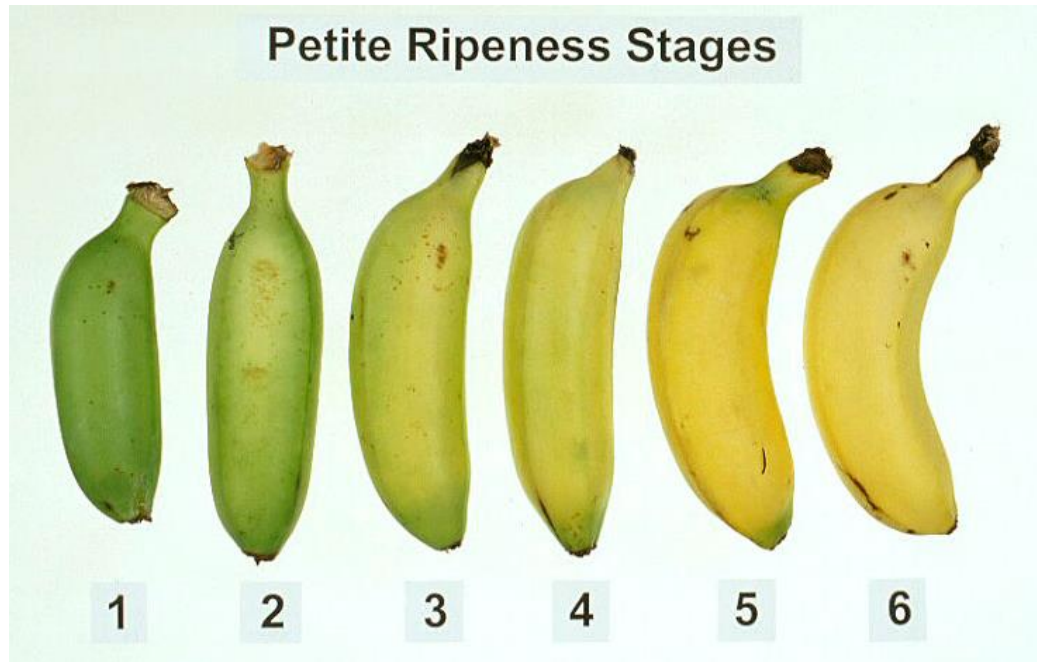
Longitudinal Section

Cross Section



- 1
- 2
- 3
- 4
- 5
- 6
- 7

Ripeness Charts for Specialty Bananas



Relative humidity during ripening and subsequent handling steps influences severity of brown discoloration of banana skin



Response to controlled atmosphere

- 2-5% O₂ and 2-5% CO₂ delays ripening, slows respiration rate
- Less than 1% Oxygen and more than 10% carbon dioxide has bad impact on quality.
- Change of gaseous concentration may increase postharvest life of green bananas from 2-4 weeks to 4-6 weeks.

Chilling Injury

- Occurs below 13⁰C

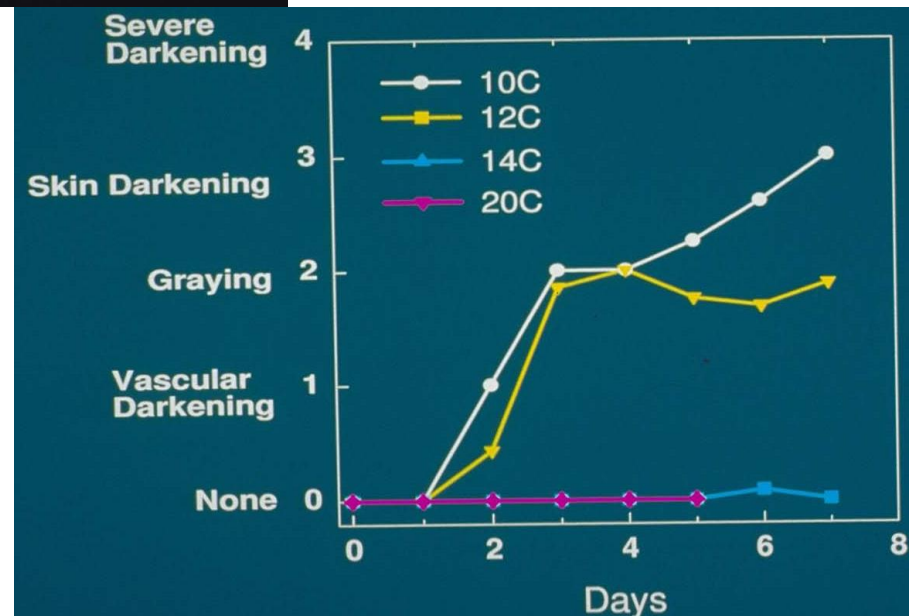
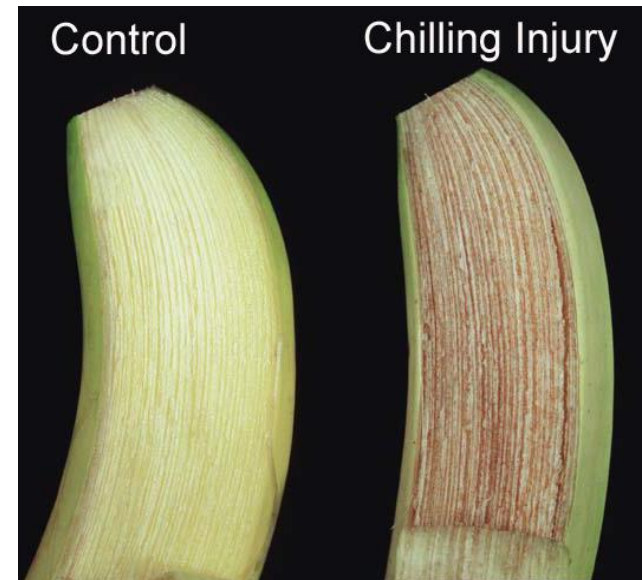
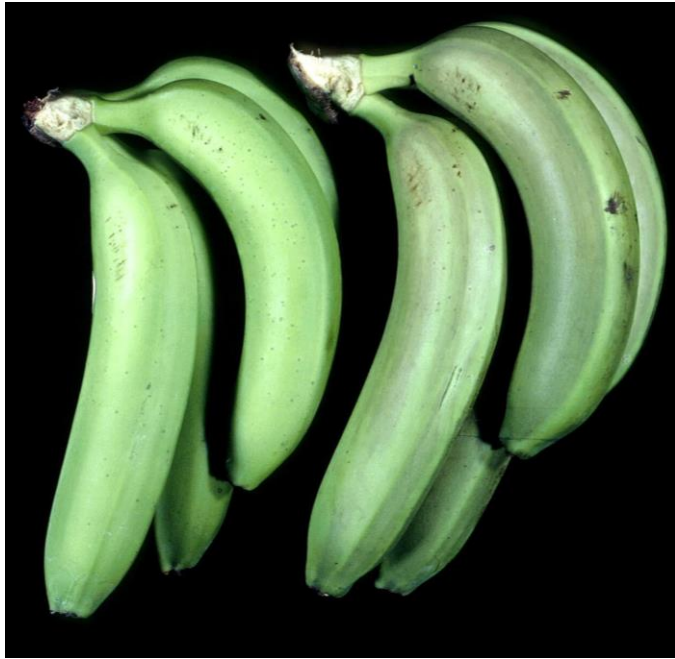
Symptoms

- Surface discoloration
- Dull or smoky colour
- Sub epidermal tissues with brown streaks
- Failure to ripen
- In severe cases, flesh browning.

Control (left two) and chilled (right two) bananas



Chilling Injury Symptoms on Bananas



Banana Defects



Skin Abrasions



Impact Bruising



Creased Stems



Crown rot

Thank You

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